

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Silke GORONZY et al.

U.S. Serial No.: Filed Concurrently Herewith

Title of Invention: METHOD FOR RECOGNIZING SPEECH USING
EIGENPRONUNCIATIONS

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PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Box Patent Application (35 U.S.C. 111)
Washington, D.C. 20231

Sir:

Before the issuance of the first Office Action, please amend the above-identified application as follows:

IN THE CLAIMS

Please amend claims 3-5, 7-9, 11-13 and 15-20 as follows:

3. (Amended) Method according to claim 1, wherein said step of determining and/or generating said approximative set of pronunciation rules (APR) is carried out repeatedly, so as to iteratively find an approximative set of pronunciation rules (APR)

fitting best to said current pronunciation (CP) and/or accent of said current speaker, in particular to consider temporal pronunciation and/or accent variations of said current speaker and/or in particular after completed recognition steps and/or obtained recognition results.

4. (Amended) Method according to claim 1, wherein said pronunciation space (PS) is generated and/or provided in a pre-processing step, in particular in advance in a recognition process.

5. (Amended) Method according to claim 1, wherein said pronunciation space (PS) is derived from a plurality and/or limited number of so-called Eigenpronunciations.

7. (Amended) Method according to claim 1, wherein said pronunciation space (PS) is modified during the process of recognition, in particular after completed recognition steps and/or obtained recognition results and/or in particular by modifying said Eigenpronunciations.

8. (Amended) Method according to claim 1, wherein said step of determining and/or generating said approximative set of pronunciation rules (APR) comprises a step of determining a pronunciation-related position of a current speaker in said pronunciation space (PS), in particular in accordance with a current pronunciation (CP) and/or accent of said current speaker.

9. (Amended) Method according to claim 1, wherein said approximative set of pronunciation rules (APR) is chosen as a given and specific set of pronunciation rules in said pronunciation space (PS), in particular as a given and specific Eigenpronunciation thereof, which is a next neighbour of the speaker's current pronunciation (CP), in particular with respect to said pronunciation-related position.

11. (Amended) Method according to claim 1, wherein said approximative set of pronunciation rules (APR) is chosen as a weighted mixture, superposition and/or the like of given pronunciation rules, sets, derivatives, and/or components thereof in said pronunciation space (PS), in particular of said Eigenpronunciations.
12. (Amended) Method according to claim 1, wherein said current lexicon (CL) is in each case at least partially based on and/or derived from a starting lexicon (SL) or initial lexicon, in particular on a canonical lexicon essentially containing canonical pronunciation variants of native speakers of a given target language (TL) only and/or in particular in the case of changing to a different and/or new speaker.
13. (Amended) Method according to claim 1, wherein the step of determining and/or generating said approximate set of pronunciation rules (APR) is at least partially based on and/or derived from a comparison of the current pronunciation (CP) with a canonical pronunciation, in particular with respect to a given utterance, recognition result and/or the like and/or in particular in the beginning of a recognition session with a different and/or new speaker.
15. (Amended) Method according to claim 13, wherein for said comparison at least one recognition step is repeated using a phone or phoneme recognizer, so as to yield a sequence of actually uttered phones, phonemes, or the like.
16. (Amended) Method according to claim 13, wherein for said comparison said current pronunciation (CP) of said current speaker is compared to a canonical pronunciation, in particular so as to generate an initial set of pronunciation rules (IR) and/or to locate the pronunciation-related position of said current speaker in said pronunciation space (PS).

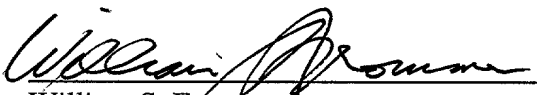
17. (Amended) Method according to claim 1, wherein from said current lexicon (CL) recognition related information, pronunciation variants and/or the like which are not covered by the speaking behaviour and/or by the current pronunciation of the current speaker are removed, so as to decrease the amount of data to be evaluated.
18. (Amended) Method according to claim 1, which is designed for a plurality of source languages (SL) and/or of target languages (TL), in particular with respect to said Eigenpronunciations.
19. (Amended) System for recognizing speech which is capable of performing the method according to claim 1.
20. (Amended) Computer program product, comprising computer program means adapted to perform and/or realize the method for recognizing speech according to claim 1 and/or the steps thereof when it is executed on a computer, a digital signal processing means and/or the like.

REMARKS

Claims 1-20 remain in the application. Claims 3-5, 7-9, 11-13 and 15-20 have been amended to eliminate multiple dependencies. Attached hereto is a marked up version of the changes made to claims 3-5, 7-9, 11-13 and 15-20 by the current amendment. The attached page is captioned "**Version with markings to show changes made.**" The filing fee has been calculated based upon these amendments to the claims.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE**In the claims:**

3. (Amended) Method according to claim 1 ~~or 2~~, wherein said step of determining and/or generating said approximative set of pronunciation rules (APR) is carried out repeatedly, so as to iteratively find an approximative set of pronunciation rules (APR) fitting best to said current pronunciation (CP) and/or accent of said current speaker, in particular to consider temporal pronunciation and/or accent variations of said current speaker and/or in particular after completed recognition steps and/or obtained recognition results.
4. (Amended) Method according to claim 1 ~~anyone of the preceding claims~~, wherein said pronunciation space (PS) is generated and/or provided in a pre-processing step, in particular in advance in a recognition process.
5. (Amended) Method according to claim 1 ~~anyone of the preceding claims~~, wherein said pronunciation space (PS) is derived from a plurality and/or limited number of so-called Eigenpronunciations.
7. (Amended) Method according to claim 1 ~~anyone of the preceding claims~~, wherein said pronunciation space (PS) is modified during the process of recognition, in particular after completed recognition steps and/or obtained recognition results and/or in particular by modifying said Eigenpronunciations.
8. (Amended) Method according to claim 1 ~~anyone of the preceding claims~~, wherein said step of determining and/or generating said approximative set of pronunciation rules (APR) comprises a step of determining a pronunciation-related position of a current speaker in said pronunciation space (PS), in particular in accordance with a current pronunciation (CP) and/or accent of said current speaker.

9. (Amended) Method according to claim 1 ~~anyone of the preceding claims~~, wherein said approximative set of pronunciation rules (APR) is chosen as a given and specific set of pronunciation rules in said pronunciation space (PS), in particular as a given and specific Eigenpronunciation thereof, which is a next neighbour of the speaker's current pronunciation (CP), in particular with respect to said pronunciation-related position.
11. (Amended) Method according to claim 1 ~~anyone of the preceding claims~~, wherein said approximative set of pronunciation rules (APR) is chosen as a weighted mixture, superposition and/or the like of given pronunciation rules, sets, derivatives, and/or components thereof in said pronunciation space (PS), in particular of said Eigenpronunciations.
12. (Amended) Method according to claim 1 ~~anyone of the preceding claims~~, wherein said current lexicon (CL) is in each case at least partially based on and/or derived from a starting lexicon (SL) or initial lexicon, in particular on a canonical lexicon essentially containing canonical pronunciation variants of native speakers of a given target language (TL) only and/or in particular in the case of changing to a different and/or new speaker.
13. (Amended) Method according to claim 1 ~~anyone of the preceding claims~~, wherein the step of determining and/or generating said approximate set of pronunciation rules (APR) is at least partially based on and/or derived from a comparison of the current pronunciation (CP) with a canonical pronunciation, in particular with respect to a given utterance, recognition result and/or the like and/or in particular in the beginning of a recognition session with a different and/or new speaker.

15. (Amended) Method according to claim 13 ~~or 14~~, wherein for said comparison at least one recognition step is repeated using a phone or phoneme recognizer, so as to yield a sequence of actually uttered phones, phonemes, or the like.
16. (Amended) Method according to claim 13 ~~anyone of the claims 13 to 15~~, wherein for said comparison said current pronunciation (CP) of said current speaker is compared to a canonical pronunciation, in particular so as to generate an initial set of pronunciation rules (IR) and/or to locate the pronunciation-related position of said current speaker in said pronunciation space (PS).
17. (Amended) Method according to claim 1 ~~anyone of the preceding claims~~, wherein from said current lexicon (CL) recognition related information, pronunciation variants and/or the like which are not covered by the speaking behaviour and/or by the current pronunciation of the current speaker are removed, so as to decrease the amount of data to be evaluated.
18. (Amended) Method according to claim 1 ~~anyone of the preceding claims~~, which is designed for a plurality of source languages (SL) and/or of target languages (TL), in particular with respect to said Eigenpronunciations.
19. (Amended) System for recognizing speech which is capable of performing the method according to claim 1 ~~anyone of the claims 1 to 18~~.
20. (Amended) Computer program product, comprising computer program means adapted to perform and/or realize the method for recognizing speech according to claim 1 ~~anyone of the claims 1 to 18~~ and/or the steps thereof when it is executed on a computer, a digital signal processing means and/or the like.